

A NEW *XENOPSYLLA* FROM HAWAII.

By KARL JORDAN, PH.D., F.R.S.

(With 4 text-figures.)

SOME time in 1931 I asked Mr. Harold R. Hagan, of the University of Hawaii, whether he could procure for me fleas from the native Hawaiian rat, as I expected this rat, if really indigenous, to have a species of flea of its own. Mr. Hagan very kindly acceded to my request and sent in June 1932 a large number of fleas collected on rats by Dr. C. R. Eskey, of the U.S. Bureau of Public Health, who had been making a survey of the flea situation in the Hawaiian islands. Among this material there is a series of specimens of a new *Xenopsylla* found principally on *Rattus hawaiiensis*. I am very grateful to Dr. C. R. Eskey and Mr. Hagan for submitting the material to me for study.

***Xenopsylla hawaiiensis* sp. nov. (text-figs. 19, 20).**

♂♀. A near relative of *X. vexabilis* Jord. 1925, known to me from Australia and New Guinea, and of *X. nesiotes* J. & R. 1908, from Christmas I., south of Java. All three species (or are they geographical developments of one species?) agree with the African *X. nubieus* Roths. 1903 and the Indian *X. astia* Roths. 1911 in the ventral arm of the IX. st. of the ♂ being only ventrally sclerified, and with *X. cheopis* Roths. 1903 in the general shape of the receptaculum seminis of the ♀. Whereas in the ♂♂ of *X. nubicus* and *X. astia* the paramere has a free, dorsal, apical, thorn-like process, the paramere is conical, and without that process in *X. nesiotes*, *X. vexabilis* and the sp. nov. In the last two species the longest bristle of segment II of hindtarsus reaches in ♂ and ♀ beyond IV, which is not the case in *X. nesiotes*; in this species the ventral tooth before the apex of the ejaculatory tube is shorter than in the other two and there is no projecting ventral tubercle posterior to the vesicle as in *X. vexabilis* and *X. hawaiiensis*; the non-sclerified portion of the ventral side of process P² of clasper is in *X. hawaiiensis* at least as long as, usually longer than, the sclerified apical portion, whereas in *X. vexabilis* and *X. nesiotes* the sclerified portion is the longer one; in the ♂ of *X. nesiotes* there is a row of three longish apical bristles on each side of the IX. t. behind the pygidium, in the two other species the median bristle is small. Last ventral bristle of VIII. st. of ♂ as near to apical margin as in *X. nesiotes* and *X. vexabilis*. On the whole the bristles of *X. hawaiiensis* are more numerous than in *X. vexabilis* and less numerous than in *X. nesiotes*. Number of lateral bristles on outer surface of hindtibia in *X. hawaiiensis* 8 to 11, in *X. vexabilis* 7 to 9, in *X. nesiotes* 10 to 14; subventral lateral bristles on outer surface of hindtibia in *X. hawaiiensis* ♂ 1 to 4, ♀ 4 or 5, in *X. vexabilis* ♂♀ 2, in *X. nesiotes* ♂♀ 4 to 6, usually 5 or 6. Bristles on outer surface of hindtarsal segment I in *X. hawaiiensis* 3 to 5, in *X. vexabilis* 3 or 4, in *X. nesiotes* 6 to 9. On outer surface of VIII. st. of ♂ in *X. hawaiiensis* 14 to 17, in *X. vexabilis* 13 or fewer, in *X. nesiotes* over 20. On outer surface of VIII. t. of ♀ inclusive of marginal row (but exclusive of marginal bristles of inner side) in *X. hawaiiensis* 27 to 33, in *X. vexabilis* 19, in *X. nesiotes* 35 or 36.

In the number of bristles on the metepimerum and the abdominal tergites I to VII and sternites III to VI *X. hawaiiensis* agrees with *X. nesiotes*, whereas *X. vexabilis* has fewer bristles: on metepimerum in *X. hawaiiensis* 12 to 14, in *X. vexabilis* 8 to 11; on abdominal tergites in *X. hawaiiensis* I 7 to 10, 6 or 7, II 15 to 17, III 16 or 17, in *X. vexabilis* I 5 or 6, 6, II 14 or 15, III 14 or 15. On sternites in *X. hawaiiensis* ♂ III 8, rarely 7, IV 8, rarely 7, V 7 to 9, VI 8 to 10, VII 9 or 10, in ♀ III 8 to 10, IV 9 or 10, V 10, VI 10 to 13, VII 10 to 12, in *X. vexabilis* ♂ III to VII 6, in ♀ III 6, IV 7, V 8, VI 8, VII 8.

Spermatheca larger than in the two allied species, as will be seen from figures 20-22, which are drawn to scale. In both *X. hawaiiensis* (text-fig. 20) and

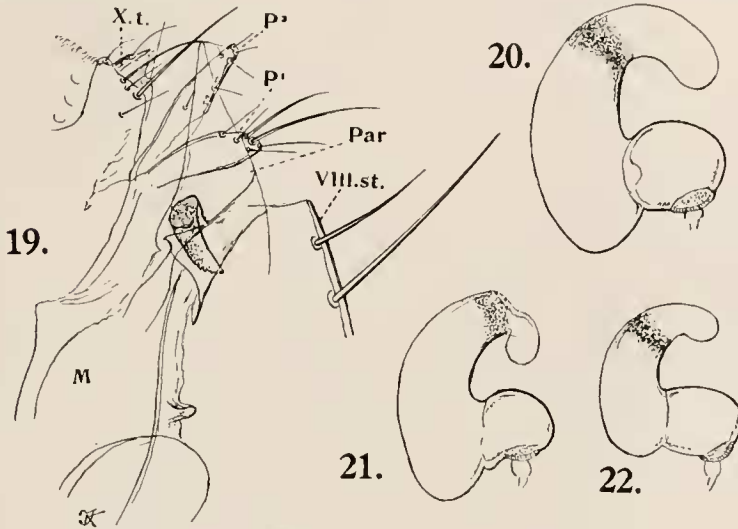


FIG. 19.—*X. hawaiiensis*.

„ 20. „ „

FIG. 21.—*X. vexabilis*.

„ 22.—*X. nesiotes*.

X. vexabilis (text-fig. 21) its tail is much more ventricose than in *X. nesiotes* (text-fig. 22); moreover, the tail is considerably longer and more strongly curved. The head of the spermatheca is more strongly convex dorsally in *X. hawaiiensis* than in *X. vexabilis*, whereas in the latter the head shows a swelling ventrally between tail and orifice; the brown tint of the tail extends farther up in *X. vexabilis* and the pale apical portion is correspondingly shorter. As we have only one ♀ of *X. vexabilis*, we do not know whether these distinctions will hold good. In the diagnosis of *X. vexabilis* (Nov. Zool. xxxii. 1925, p. 100), it is said that the spermatheca is variable and that we had one pair; this contradiction requires explanation. The diagnosis was based on a ♂ and a ♀; when correcting the proofs I found that we had a second ♀, unmounted, from the same place and host; the spermatheca appeared to differ to some extent from that of the mounted specimen, and I added the word variable to the statement “the spermatheca nearly as in *X. nesiotes*,” and forgot to say that we had a ♀ besides the pair. The specimen is now mounted, and I find that its spermatheca is far more different than it appeared to be when still in alcohol; the specimen probably represents a new species; more material is required.

Process P² of the clasper (text-fig. 19) bears 6 bristles, 3 of them at apical

margin, 2 lateral close to them and one dorso-marginal, occasionally one of the lateral bristles missing or an additional apical one present. The dark collar above the apical tube of the ejaculatory duct much narrower than in *X. nesiotes*, as is also the case in *X. vexabilis*.

Length ♂ 1.6–1.7 mm., ♀ 2.0–2.3 mm.

Hawaiian Islands: Honokaa, Hawaii; and Maui; on rats, especially on *Rattus hawaiiensis*, a series.

The species was obtained together with a number of other fleas, a list of which has been sent to Dr. C. R. Eskey. *X. cheopis* Roths. 1903 was commoner than *X. hawaiiensis*.

Dr. C. R. Eskey has given me the following interesting information: "*X. hawaiiensis* has a very peculiar distribution. For example, not a single specimen of it has been found in Honolulu or vicinity, while it is quite common on rats caught about 9 miles away on the opposite side of the island. It is essentially a flea of field rats and rarely found on rats caught in buildings."
